

CLAIMS

1. A fluid treatment system including a fluid treatment assembly (13) and means (10) for feeding the treatment assembly (13) with fluid to be treated and receiving treated fluid, the means including a support structure (12) on which the treatment assembly (13) is adapted to be removably mounted to interengage with each other complementary connectors (21₁-21₃, 36₁-36₃) of the treatment assembly (13) and the feeding and receiving means (10) to establish a flow of fluid from the feeding and receiving means toward the treatment assembly and vice versa, which system is characterized in that it has cooperating functional surfaces (37, 38, 38') formed on the treatment assembly (13) and the support structure (12) so that they can enter into mutual contact to immobilize the treatment assembly (13) against movement in translation to keep the complementary connectors (21₁-21₃, 36₁-36₃) interengaged with each other when the treatment assembly (13) is mounted on the support structure (12) and to allow the treatment assembly (13) to be released by applying to it an action limited to tilting relative to the support structure (12), guided by the interengaged complementary connectors (21₁-21₃, 36₁-36₃), to remove the treatment assembly (13) from the support structure (12).

2. A system according to claim 1, characterized in that, to form the cooperating surfaces, either the treatment assembly (13) or the support structure (12) includes at least one dihedral (25) or at least one concave portion (25') and either the support structure (12) or the treatment assembly (13), whichever does not include at least one dihedral (25) or at least one concave portion (25'), includes at least one bevel (26) or at least one convex portion having a configuration

complementary to that of the dihedron (25) or the concave portion (25'), respectively.

3. A system according to claim 2, characterized in that the support structure includes two face to face
5 support arms (12) each forming a bearing surface (18) for a corresponding lateral extension (20) of the treatment assembly (13).

4. A system according to claim 3, characterized in that each lateral extension (20) has a bevel (26) or a
10 convex portion and each support arm (12) has a heel-piece (17) that either forms with the bearing surface (18) of its support arm (12) a dihedron (25) or has a concave portion (25') extending between the bearing surface of its support arm and its summit.

15 5. A system according to claim 4, characterized in that each lateral extension (20) includes an opening (27) bordered by a bevel (26) or a convex portion and preferably taking the form of a notch and a heel-piece (17) of the corresponding support arm (12) is adapted to
20 be nested in the opening (27).

6. A system according to claim 4 or claim 5, characterized in that each support arm (12) has a recess (16) in its inside face that faces toward the inside face of the opposite support arm (12) and forms the heel-piece
25 (17) and the bearing surface (18) of the support arm (12).

7. A system according to claim 6, characterized in that each recess (16) is bordered by an inclined plane (28) for guiding the lateral extension (20) associated
30 with the support arm (12) containing the recess (16) toward the connectors (36₁-36₃) of the feeding and receiving means (10) and which overlies the bearing surface (18) formed by the recess (16).

8. A system according to claim 7, characterized in
35 that the treatment assembly (13) includes a bearing

member (33) for each of a user's thumbs and each support arm (12) includes a bearing member (34) for at least some of the fingers of each hand of the user, these members being conformed and arranged so that they allow the user to move the treatment assembly (13) with his thumbs to mount it on the support structure (12) without moving the feeding and receiving means (10).

9. A system according to claim 8, characterized in that each support arm (12) further includes, at its end farthest away from the connectors of the feeding and receiving means (10), a bearing surface (35) adapted to receive one of the user's thumbs in order to prevent the feeding and receiving means (10) from moving when the treatment assembly (13) is removed from the support structure (12).

10. A system according to any of claims 7 to 9, characterized in that each heel-piece (17) has between its summit and its functional surface an inclined surface (29) which faces the inclined plane (28) and is adapted to guide the bevel (26) or the convex portion of the associated lateral extension (20) toward the corresponding dihedron (25) or the corresponding concave portion, respectively, when the user tilts the treatment assembly (13).

11. A system according to claim 10, characterized in that each support arm (12) includes a notch (30) extending the recess (16) as far as the end of the support arm farthest away from the connectors (36₁-36₃) of the feeding and receiving means (10) and forming a bearing surface (31) for the portion of the associated lateral extension (20) that extends from the opening (27) in the lateral extension (20) to the longitudinal end thereof farthest away from the fluid inlet and outlet orifices of the connectors (21₁-21₃) of the treatment assembly (13).

12. A system according to any of claims 1 to 11, characterized in that the fluid treatment assembly includes at least one fluid treatment module (14, 15) accommodating fluid treatment means.

5 13. A system according to claim 12, characterized in that the fluid treatment module or one of the fluid treatment modules accommodates fluid treatment means for treating the fluid by reverse osmosis, nanofiltration, ultrafiltration or tangential microfiltration.

10 14. A system according to claim 12 or claim 13, characterized in that the fluid treatment module or each fluid treatment module (14, 15) is an integral and disposable unit.

15 15. A system according to any of claims 1 to 14, characterized in that the feeding and receiving means (10) take the form of a purified water production unit.

16. A fluid treatment module (14, 15) including fluid inlet and outlet connectors (21₁-21₃) communicating with the interior of the module, which accommodates fluid
20 treatment means, which module is characterized in that it further includes at least one lateral extension (20) having a functional surface (37) conformed and arranged so that it allows the module (14, 15) to be removably mounted on a complementary support structure (12) and
25 immobilized thereon against movement in translation and also to be released by exerting thereon an action limited to tilting it relative to the support structure (12).

17. A module according to claim 16, characterized in that it includes a cylindrical enclosure (23) defining
30 an axis to which the connectors (21₁-21₃) are globally perpendicular.

18. A module according to claim 17, characterized in that it includes two lateral extensions (20) substantially parallel to the connectors (21₁-21₃) and on
35 respective opposite sides thereof and each including an

opening (27) that preferably takes the form of a notch and is bordered by a bevel (26) or a convex portion defining the functional surface (37).

19. A module according to any of claims 16 to 18,
5 characterized in it accommodates fluid treatment means for treating the fluid by reverse osmosis, nanofiltration, ultrafiltration or tangential microfiltration.

20. A module according to any of claims 16 to 19,
10 characterized in that it includes two bearing members (33) for a user's thumbs at the longitudinal end of the module with the connectors (21₁-21₃) and on the distal side thereof relative to the fluid inlet and outlet orifices of the connectors (21₁-21₃).

15 21. A unit (10) for feeding a fluid treatment assembly (13) with fluid to be treated and receiving treated fluid, in particular for the production of purified water, the unit including fluid inlet and outlet connectors (36₁-36₃) adapted to cooperate with
20 complementary connectors (21₁-21₃) of the treatment assembly (13) when the latter is removably mounted on the unit (10), which unit (10) is characterized in that it includes, for the purposes of mounting, two face to face support arms (12) each having a bearing surface (18) for
25 the treatment assembly (13) and a heel-piece (17) having a functional surface (38, 38') conformed and adapted to immobilize the treatment assembly (13) against movement in translation when the latter is mounted on the unit (10) and to release the treatment assembly (13) by
30 exerting thereon an action limited to tilting it relative to the support arms (12).

22. A unit according to claim 21, characterized in that the heel-piece forms with the bearing surface a dihedron (25) defining the functional surface (38) or has
35 a concave portion (25') extending between the bearing

surface and the summit of the heel-piece and defining the functional surface (38').

23. A unit according to claim 21 or claim 22, characterized in that each support arm (12) has, in its
5 inside face that faces toward the inside face of the opposite support arm (12), a recess (16) which forms the heel-piece (17) and the bearing surface (18) of the support arm (12).

24. A unit according to claim 23, characterized in
10 that each recess (16) is bordered by an inclined guide plane (28) overlying the bearing surface (18) formed by the recess (16).

25. A unit according to claim 24, characterized in that each support arm (12) includes a bearing member (34)
15 for at least some of the fingers of one hand of the user.

26. A unit according to claim 25, characterized in that each support arm (12) further includes a bearing surface (35) for a thumb of the user at its end farthest away from the connectors (36₁-36₃) of the unit.

20 27. A unit according to any of claims 24 to 26, characterized in that each heel-piece (17) has an inclined guide surface (29) extending between its summit and its functional surface and disposed opposite the inclined plane (28).

25 28. A unit according to any of claims 21 to 27, characterized in that each support arm (12) includes a notch (30) extending the recess (16) as far as the end of the support arm (12) farthest away from the connectors of the unit and forming an additional bearing surface (31)
30 for the treatment assembly (13) which is coplanar with the other bearing surface (18) for the treatment assembly.